

In Reply Refer To:
Docket: 50-285/87-05
EA No. 87-72

Omaha Public Power District
ATTN: R. L. Andrews, Division Manager-
Nuclear Production
1623 Harney Street
Omaha, Nebraska 68102

Gentlemen:

Thank you for your letters, dated September 24, 1987, November 4, 1987, and January 27, 1988, in response to our letters, dated May 8, 1987, and August 24, 1987. We have no further questions at this time and will review your corrective action during a future inspection.

Our acceptance of your responses is predicated upon our understanding of the following conditions resulting from procedures in effect at Fort Calhoun Station:

- ° Meggering of safety-related installations will be continued using procedures which specify the proper voltages.
- ° Procedures will be issued to assure the control of the torque on safety-related bolted joints. The torque values in the procedures will be specified to assure that allowable dynamic (including seismic loads) design stresses will not be exceeded. The procedures shall also assure that the minimum allowed torque values will not be less than that which will assure adequate joint integrity.

If the above understanding is incorrect, please notify me of the conditions which are applicable within 30 days of the date of this letter.

Sincerely,

L. J. Callan, Director
Division of Reactor Projects

cc:
Fort Calhoun Station
ATTN: W. G. Gates, Manager
P.O. Box 399
Fort Calhoun, Nebraska 68023

(cc cont'd. next page)

RI *W*
JRBoardman:cs
2/25/88

C:OPS
JEGagliardo
2/25/88
J Milhoan
J Milhoan
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EO *W*
DAPowers
2/26/88

C:PSB
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D:DRP
LJCallan
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Reconcur
JEGagliardo
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PDR ADOCK 05000285
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Omaha Public Power District
1623 Harney, Omaha, Nebraska 68102
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September 24, 1987
LIC-87-248

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

- References:
1. Docket No. 50-285
 2. Letter from NRC (J. E. Gagliardo) to OPPD (R. L. Andrews) dated May 8, 1987
 3. Letter from NRC (R. E. Hall) to OPPD (R. L. Andrews) dated August 24, 1987

Gentlemen:

SUBJECT: Response to Notice of Violation (NRC Inspection Report
50-285/87-05)

Omaha Public Power District (OPPD) recently received the Reference 3 Notice of Violation, issued as a result of the subject inspection report. This report identified three violations, containing several examples. The violations include failure to provide for independent design verification; follow maintenance order torque requirements; specify torque acceptance criteria in a maintenance procedure; conduct a proper review of the deletion of a design requirement; establish procedures for ensuring the appropriateness of the accuracy of calibration instrumentation; specify equipment, criteria, or procedure for meggering; and follow appropriate maintenance procedure for the testing of AC tie breakers.

These violations were previously presented in Reference 2 and were discussed in an enforcement conference held in the Region IV office on May 14, 1987. Pursuant to the provisions of 10 CFR Part 2.201, please find attached OPPD's response to the violations. If you have any questions concerning this matter, please do not hesitate to contact us.

Sincerely,

R. L. Andrews
Division Manager
Nuclear Production

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PDR ADCK 05000285
Q PDR

~~8pp~~

RLA/me

cc: LeBoeuf, Lamb, Leiby & MacRae
R. D. Martin, NRC Regional Administrator
A. Bournia, NRC Project Manager
P. H. Marrell, NRC Senior Resident Inspector

IE01

Response to notice of Violation

During an NRC inspection conducted on April 6-10, 1987, violations of NRC requirements were identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," 10 CFR Part 2, Appendix C (1987), the violations are listed below:

- A. 10 CFR Part 50, Appendix B, Criterion III, requires, in part, that measures be established to assure that applicable regulatory requirements and design bases for those structures, systems, and components to which this appendix applies, are correctly translated into specifications, drawings, procedures, and instructions. These measures must include provisions to assure that appropriate quality standards are specified and included in design documents and that deviations from such standards are controlled. The design control measures must provide for verifying or checking the adequacy of design, such as by the performance of design reviews, by the use of alternate or simplified calculational methods, or by the performance of a suitable testing program. In addition, design changes, including field changes, must be subject to design control measures commensurate with those applied to the original design.

Section A.4, "Design Control," of the OPPD Quality Assurance Plan commits to Regulatory Guide 1.64 and ANSI N45.2.11-1974. Section 6.0, "Design Verification," of ANSI N45.2.11-1974 specifies that design verification is to be performed by individuals or groups other than those who performed the original design and that design activities are to be controlled.

Contrary to the above, in March 1983, the licensee performed Maintenance Order (MO) 16275, which covered the reinstallation of main steam safety relief valves (MS SRV) 275, 276, 277, 278, 280, 281, 282, 291, and 292.

1. The MO contained instructions to torque the subject valves' in-line flange bolts to 750 foot-pounds; however, there was no documentation that an independent design verification had been performed in determining the specified torque value.
2. During MS SRV installation, the bolts were not stressed to the specified 750 foot-pounds but rather were stressed to unknown values in an uncontrolled manner (the use of a slugging wrench).

This is a Severity Level IV violation (Supplement II). (285/8705-01)

OPPD's Response

Reason for the Violation, if Admitted

During March 1983, the main steam safety valves (MSSV's) were installed as a result of Maintenance Order (MO) 16275. This MO contained information concerning torque values for the MSSV inlet flange studs. This information was deleted, without Plant Review Committee review, by the craft supervisor. The torque value of 750 foot-pounds was deleted because the craftsman could not physically fit the torque wrench onto the stud due to the limited space adjacent to the MSSV's. The use of a slugging wrench was then employed to tighten the bolted joint.

Violation A (Continued)

OPPD's Response (Continued)

Reason for the Violation, if Admitted (Continued)

The deletion of the torque value from the maintenance order instructions was not a violation of plant standing orders as a PRC approved procedure was not required in order to perform the work. However, this represents improper management attention to safety related bolted pressure boundary connections. This method of bolt-up was utilized until May 1987, when this violation was identified.

The Corrective Steps Which Have Been Taken and the Results Achieved

OPPD has developed and issued interim torquing guidelines. These guidelines provided torque values for the following: CQE and fire protection pressure boundary bolted connections; seismic mounting or supports of mechanical and electrical equipment; EEQ equipment where required to maintain qualification; and NSSS threaded connections unless safety-wired or lock-nutted. These guidelines were implemented in May 1987.

Upon issuance of these guidelines, specific attention was given to those maintenance orders which encompassed the above noted items to ensure the requirements of the guidelines were being fulfilled. Additionally, a review was conducted of 1987 outage completed MO's and any "in-progress" MO's which needed to adhere to the requirements of the guidelines. Corrective action was taken as necessary to ensure compliance.

The MSSV reinstallation during the 1987 refueling outage occurred in early June 1987. OPPD, in an effort to ensure that the reinstallation of the MSSVs did not involve the use of a possibly over-stressed stud due to previous slugging operations, chose to purchase new studs for the MSSV inlet flanges. A raw procedure was developed and received PRC approval for the reinstallation. This procedure, MP-MS-4, provided a calculational method to ensure that the pre-load stress of the studs on the inlet flange to the MSSVs was at a value of less than 50 percent of the yield strength of the particular stud material. This was verified by measuring actual stud elongation using vernier calipers.

Slugging of MSSVs, as in the past at Fort Calhoun Station, has proven to be a reliable leak-free method of bolting up the inlet flanges of the MSSVs. On July 2, 1986, when the Fort Calhoun Station tripped from full power operation, the MSSVs operated as designed to prevent overpressurization of the Main Steam piping. The inlet flange, after experiencing a higher than normal pressure during the transient, remained leak-free throughout the remainder of the operating cycle.

OPPD reviewed the method for performing the slugging. Based on the access in the area, the longest wrench that could have been used was a one-foot wrench. If a craftsman were to use a one-foot long slugging wrench in order to "sluy-up" the MSSV studs, he would have to exhibit a force of 2085 foot-pounds at the very end of the slugging wrench. This would require a large swing of the sledge hammer and subsequently, a lot of room to swing it in. Very little room exists to perform this operation. OPPD therefore believes that previous slugging operation, even though uncontrolled, did not cause the stud material to be overstressed.

violation A (Continued)

The Corrective Steps Which Will be Taken to Avoid Further Violations

OPPD has expanded upon the interim torquing guidelines program and has developed a new procedure concerning bolting. This procedure requires either vendor supplied torque values or torque values that have been independently verified. This procedure is currently under review and awaiting PRC concurrence. This procedure will provide written instruction for selecting torque values for any bolted joint and will be used when updating or issuing procedures which require torquing.

The Date When Full Compliance Will be Achieved

OPPD is presently in full compliance.

- B. 10 CFR Part 50, Appendix B, Criterion V, requires, in part, that activities that affect quality shall be prescribed by documented instructions, procedures, or drawings of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, and drawings. Instructions, procedures, or drawings shall include appropriate quantitative or qualitative acceptance criteria.

Section A.6, "Instruction, Procedures, and Drawings," of the OPPD Quality Assurance Plan implements this requirement, and specifies, in part, that quality-related activities for plant operations, fabrication, processing, assembly, inspection, and test be accomplished in accordance with the instructions, procedures, or drawings, and that such documentation adequately reflects all applicable quality requirements and contain the appropriate quantitative acceptance criteria (such as dimensions, tolerances, and samples) for determining that important activities have been satisfactorily accomplished.

Contrary to the above:

1. The licensee's procedure MP-MS-1, Revision 13, "Main Steam Safety Valve Inspection and Repair," dated March 19, 1987, which was used to reinstall MS SRV 275, 276, 277, 278, 280, 281, 282, 291, and 292 did not specify torque values to assure that design bolt stress was achieved.
2. The initial MO 16275 specified a bolt torque value; however, the parameter was marked through with the comment "cannot be torqued." Later MOs did not specify torque values. Therefore, a design requirement was deleted without a proper review and acceptance of the revised work instruction.
3. The licensee failed to establish procedures for assuring that the accuracy of instruments used to calibrate (a) the wide range level indicators for steam generators A and B, and (b) the temperature detectors for reactor coolant hot and cold legs were within the accuracy constraints required by the design bases.
4. The licensee failed to specify equipment, acceptance criteria, or procedure for meggering. Examples of such failures include the following:
 - a. Procedures PM-EE-VA-3/7, Revision 0, and PM-MOV-1, Revision 3, indicated that meggering was to be accomplished, however, neither the instrument nor the voltage of the instrument was provided.
 - b. Procedures PM-EE-VA-3/7, Revision 0; PM-EE-1-13, Revision 5; and PM-EE-3.0, Revision 0, do not specify meggering acceptance criteria.
 - c. No procedure specified meggering controls to be applied to containment ventilation and cooling fan motors.

This is a Severity Level IV violation (Supplement II). (285/8705-02)

Violation B (Continued)

OPPD's Response

Reason for the Violation, if Admitted

1. MP-MS-1, Revision 13, "Main Steam Safety Valve Inspection and Repair," dated March 19, 1987, did not specify torque values for reinstallation of the Main Steam Safety Valves (MSSVs). Past practice for installation of the MSSVs has utilized the practice of "slugging." This was due to the fact that it was, and still is, impossible to physically fit to the torque wrench onto the flange stud nuts due to the limited space adjacent to the MSSVs. This method of bolt-up was discontinued in May 1987 when this violation was identified.
2. MO 16275 was issued to reinstall the main steam safety valves. The work was completed in March 1983. The MO contained instructions to torque the MSSVs to 750 foot-pounds. These instructions were marked through with a comment "cannot be torqued." Because a PRC approved procedure was not required, the fact that utilizing a torque wrench was not possible was not noted by the group which supplied the values. This failure to feed back information resulted in the violation.
3. In the area of instrument accuracy, OPPD was found to be deficient of procedures for assuring the accuracy of instruments used to calibrate (a) the wide range level indicators for steam generators A and B, and (b) the temperature detectors for reactor coolant hot and cold legs were within the accuracy constraints required by the design bases. OPPD did not have a specific procedure assuring instrument accuracies during calibration of the specified instrumentation. However, an investigation into this accuracy question has demonstrated that OPPD currently meets appropriate acceptance criteria for accuracies between test and measuring equipment and process equipment.
4. We do not believe this to be a violation of Criterion V of Appendix B to 10 CFR Part 50. OPPD has long used meggering as a gross indication of cable and/or equipment integrity. The measurements taken have been used as a qualitative measurement, not quantitative. Additionally, OPPD believes that meggering is in excess of the requirements as it relates to vendor manual requirements. Also, surveillance testing (refueling Surveillance Tests and Operational Surveillance Tests) ensure proper operability of equipment.

The Corrective Steps Which Have Been Taken and the Results Achieved.

1. OPPD has developed and issued interim torquing guidelines. With these guidelines in place, a new procedure was written and issued covering the reinstallation of the MSSVs, including necessary quantitative acceptance criteria.
2. Increased attention has been given to maintenance of safety-related systems and detailed attention has been given to the areas of procedures and torquing requirements. In this new environment, the reinstallation of the MSSVs requires the use of a PRC approved procedure (MP-MS-4). As noted in Violation A, 1987 refueling outage maintenance orders were also reviewed for torquing considerations.

Violation B (Continued)

The Corrective Steps Which Have Been Taken and the Results Achieved. (Continued)

3. Safety related calibration procedures performed during the 1987 refueling outage were evaluated for compliance with calibration accuracy requirements stated in Standing Order M-28, "Calibration of Test Equipment and Plant Process Equipment used to Support the 'In-Service Inspection of Nuclear Plant Components' Program." Those procedures examined complied with the requirements of Standing Order M-28. In the interim period, prior to safety related calibration procedure upgrading, a policy has been implemented requiring engineering to identify safety-related accuracies prior to performance of any safety related calibration procedure.
4. OPPD believes that this item is not a violation of Criterion V of 10 CFR 50, Appendix B. OPPD has reviewed these areas of concern and will investigate the applicability of quantitative rather than qualitative acceptance criteria for incorporation into applicable procedures.

The Corrective Steps Which Will be Taken to Avoid Further Violations

1. OPPD has expanded upon the interim torquing guidelines and is currently awaiting PRC approval of the new procedure concerning bolting. This procedure will provide written instructions for selecting torque values for any bolted joint and will be used when updating or issuing procedures which require torquing.
2. Heightened management attention to the use of PRC approved procedures for maintenance on safety-related equipment has resulted in the development of a new bolting procedure. As with item 1, this procedure will provide the necessary written guidance to ensure bolted joints are formed to the proper written acceptance criteria.
3. OPPD uses generic test instruments rather than job specific test instruments to perform calibrations on process equipment. In order to ensure that appropriate quantitative acceptance criteria exists between process equipment and its test equipment, OPPD will review and update safety related calibration procedures following an evaluation of all safety related process equipment versus appropriate test equipment accuracies.
4. Heightened management attention to this matter is being given and will result in the development of a generic procedure to identify proper meggering techniques. This procedure will identify applicable acceptance criteria (either qualitative or quantitative) to be used during the meggering process and will be used when updating or issuing procedures which require meggering.

Also, OPPD is currently developing a procedure writer's guide which will be used as guidance to prepare and update specific procedures. Requirements for such items as torquing, test equipment accuracy, and meggering will be addressed and reviewed for inclusion into the appropriate procedures.

The Date When Full Compliance will be Achieved

OPPD is currently in full compliance relative to the applicable interim policies and programs.

C. Technical Specification 5.8.1 requires that written procedures and administrative policies shall be established, implemented and maintained that meet or exceed the minimum requirements of Sections 5.1 and 5.3 of ANSI N18.7-1972 and Appendix A of USNRC Regulatory Guide 1.33.

Tie Breaker Calibration Procedure, Revision 3, satisfies the above requirements for AC circuit breaker testing.

Contrary to the above, the licensee failed to implement the appropriate procedure and instead, an incorrect procedure for CP-main breakers was used for testing the CP-tie breakers.

This is a Severity Level IV violation (Supplement I)

OPPD's Response

The Reason for the Violation, if Admitted

OPPD admits the violation occurred. Investigation into the reason for the use of the incorrect calibration procedure revealed that the preventive maintenance (PM) sheet for the tie breaker did not specify which calibration procedure to use. As a result, the foreman in charge of the task obtained what he felt was the correct procedure and assigned the task to an electrician. The electrician, assuming he had the correct procedure, commenced performance of the procedure until trouble occurred during overcurrent testing. At that time the electrician determined that the incorrect procedure was being used.

The Corrective Steps That Have Been Taken and the Results Achieved

The correct calibration procedure was obtained and performed satisfactorily on the tie breaker. Additionally, main and tie breakers previously calibrated during the 1987 refueling outage were verified to be calibrated using the correct procedures.

The Corrective Steps Which Have Been Taken to Avoid Further Violations

The PM sheets associated with the main breakers and tie breakers were revised on April 21, 1987, to list the specific calibration procedures to be used.

The Date When Full Compliance will be Achieved

OPPD is now in full compliance.

Omaha Public Power District
1623 Rainey Omaha, Nebraska 68102
402-536-4000

November 4, 1987
LIC-87-680

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

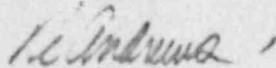
- References:
1. Docket No. 50-285
 2. Letter from NRC (J. E. Gagliardo) to OPPD (R. L. Andrews) dated May 8, 1987
 3. Letter from NRC (R. E. Hall) to OPPD (R. L. Andrews) dated August 24, 1987
 4. Letter OPPD (R. L. Andrews) to NRC (Document Control Desk) dated September 24, 1987 (LIC-87-248)

Gentlemen:

SUBJECT: Revised Response - Notice of Violation (NRC Inspection Report 50-285/87-05)

Omaha Public Power District's (OPPD) response to the Notice of Violation as contained in Reference 4 has been revised. The revision pertains to the response to Violation B(4) and is denoted by a vertical line in the right margin. If you have any questions concerning this matter, please contact us.

Sincerely,



R. L. Andrews
Division Manager
Nuclear Production

RLA/me

cc: LeBoeuf, Lamb, Leiby & MacRae
R. D. Martin, NRC Regional Administrator
A. Bournia, NRC Project Manager
P. H. Harrell, NRC Senior Resident Inspector

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Response to Notice of Violation

During an NRC inspection conducted on April 6-10, 1987, violations of NRC requirements were identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," 10 CFR Part 2, Appendix C (1987), the violations are listed below:

- A. 10 CFR Part 50, Appendix B, Criterion III, requires, in part, that measures be established to assure that applicable regulatory requirements and design bases for those structures, systems, and components to which this appendix applies, are correctly translated into specifications, drawings, procedures, and instructions. These measures must include provisions to assure that appropriate quality standards are specified and included in design documents and that deviations from such standards are controlled. The design control measures must provide for verifying or checking the adequacy of design, such as by the performance of design reviews, by the use of alternate or simplified calculational methods, or by the performance of a suitable testing program. In addition, design changes, including field changes, must be subject to design control measures commensurate with those applied to the original design.

Section A.4, "Design Control," of the OPPD Quality Assurance Plan commits to Regulatory Guide 1.64 and ANSI N45.2.11-1974. Section 6.0, "Design Verification," of ANSI N45.2.11-1974 specifies that design verification is to be performed by individuals or groups other than those who performed the original design and that design activities are to be controlled.

Contrary to the above, in March 1983, the licensee performed Maintenance Order (MO) 16275, which covered the reinstallation of main steam safety relief valves (MS SRV) 275, 276, 277, 278, 280, 281, 282, 291, and 292.

1. The MO contained instructions to torque the subject valves' in-line flange bolts to 750 foot-pounds; however, there was no documentation that an independent design verification had been performed in determining the specified torque value.
2. During MS SRV installation, the bolts were not stressed to the specified 750 foot-pounds but rather were stressed to unknown values in an uncontrolled manner (the use of a slugging wrench).

This is a Severity Level IV violation (Supplement II). (285/8705-01)

OPPD's Response

Reason for the Violation, if Admitted

During March 1983, the main steam safety valves (MSSV's) were installed as a result of Maintenance Order (MO) 16275. This MO contained information concerning torque values for the MSSV inlet flange studs. This information was deleted, without Plant Review Committee review, by the craft supervisor. The torque value of 750 foot-pounds was deleted because the craftsman could not physically fit the torque wrench onto the stud due to the limited space adjacent to the MSSV's. The use of a slugging wrench was then employed to tighten the bolted joint.

Violation A (Continued)

OPPD's Response (Continued)

Reason for the Violation, if Admitted (Continued)

The deletion of the torque value from the maintenance order instructions was not a violation of plant standing orders as a PRC approved procedure was not required in order to perform the work. However, this represents improper management attention to safety related bolted pressure boundary connections. This method of bolt-up was utilized until May 1987, when this violation was identified.

The Corrective Steps Which Have Been Taken and the Results Achieved

OPPD has developed and issued interim torquing guidelines. These guidelines provided torque values for the following: CQE and fire protection pressure boundary bolted connections; seismic mounting or supports of mechanical and electrical equipment; EEQ equipment where required to maintain qualification; and NSSS threaded connections unless safety-wired or lock-nutted. These guidelines were implemented in May 1987.

Upon issuance of these guidelines, specific attention was given to those maintenance orders which encompassed the above noted items to ensure the requirements of the guidelines were being fulfilled. Additionally, a review was conducted of 1987 outage completed MO's and any "in-progress" MO's which needed to adhere to the requirements of the guidelines. Corrective action was taken as necessary to ensure compliance.

The MSSV reinstallation during the 1987 refueling outage occurred in early June 1987. OPPD, in an effort to ensure that the reinstallation of the MSSVs did not involve the use of a possibly over-stressed stud due to previous slugging operations, chose to purchase new studs for the MSSV inlet flanges. A new procedure was developed and received PRC approval for the reinstallation. This procedure, MP-MS-4, provided a calculational method to ensure that the pre-load stress of the studs on the inlet flange to the MSSVs was at a value of less than 50 percent of the yield strength of the particular stud material. This was verified by measuring actual stud elongation using vernier calipers.

Slugging of MSSVs, as in the past at Fort Calhoun Station, has proven to be a reliable leak-free method of bolting up the inlet flanges of the MSSVs. On July 2, 1986, when the Fort Calhoun Station tripped from full power operation, the MSSVs operated as designed to prevent overpressurization of the Main Steam piping. The inlet flange, after experiencing a higher than normal pressure during the transient, remained leak-free throughout the remainder of the operating cycle.

OPPD reviewed the method for performing the slugging. Based on the access in the area, the longest wrench that could have been used was a one-foot wrench. If a craftsman were to use a one-foot long slugging wrench in order to "slug-up" the MSSV studs, he would have to exhibit a force of 2085 foot-pounds at the very end of the slugging wrench. This would require a large swing of the sledge hammer and subsequently, a lot of room to swing it in. Very little room exists to perform this operation. OPPD therefore believes that previous slugging operation, even though uncontrolled, did not cause the stud material to be overstressed.

Violation A (Continued)

The Corrective Steps Which Will be Taken to Avoid Further Violations

OPPL has expanded upon the interim torquing guidelines program and has developed a new procedure concerning bolting. This procedure requires either vendor supplied torque values or torque values that have been independently verified. This procedure is currently under review and awaiting PRC concurrence. This procedure will provide written instruction for selecting torque values for any bolted joint and will be used when updating or issuing procedures which require torquing.

The Date When Full Compliance Will be Achieved

OPPD is presently in full compliance.

- B. 10 CFR Part 50, Appendix B, Criterion V, requires, in part, that activities that affect quality shall be prescribed by documented instructions, procedures, or drawings of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, and drawings. Instructions, procedures, or drawings shall include appropriate quantitative or qualitative acceptance criteria.

Section A.6, "Instruction, Procedures, and Drawings," of the OPPD Quality Assurance Plan implements this requirement, and specifies, in part, that quality-related activities for plant operations, fabrication, processing, assembly, inspection, and test be accomplished in accordance with the instructions, procedures, or drawings, and that such documentation adequately reflects all applicable quality requirements and contain the appropriate quantitative acceptance criteria (such as dimensions, tolerances, and samples) for determining that important activities have been satisfactorily accomplished.

Contrary to the above:

1. The licensee's procedure MP-MS-1, Revision 13, "Main Steam Safety Valve Inspection and Repair," dated March 19, 1987, which was used to reinstall MS SRV 275, 276, 277, 278, 280, 281, 282, 291, and 292 did not specify torque values to assure that design bolt stress was achieved.
2. The initial MO 16275 specified a bolt torque value; however, the parameter was marked through with the comment "cannot be torqued." Later MOs did not specify torque values. Therefore, a design requirement was deleted without a proper review and acceptance of the revised work instruction.
3. The licensee failed to establish procedures for assuring that the accuracy of instruments used to calibrate (a) the wide range level indicators for steam generators A and B, and (b) the temperature detectors for reactor coolant hot and cold legs were within the accuracy constraints required by the design bases.
4. The licensee failed to specify equipment, acceptance criteria, or procedure for meggering. Examples of such failures include the following:
 - a. Procedures PM-EE-VA-3/7, Revision 0, and PM-MOV-1, Revision 3, indicated that meggering was to be accomplished, however, neither the instrument nor the voltage of the instrument was provided.
 - b. Procedures PM-EE-VA-3/7, Revision 0; PM-EE-1-13, Revision 5; and PM-EE-3.0, Revision 0, do not specify meggering acceptance criteria.
 - c. No procedure specified meggering controls to be applied to containment ventilation and cooling fan motors.

This is a Severity Level IV violation (Supplement II). (285/8705-02)

Violation B (Continued)

OPPD's Response

Reason for the Violation, if Admitted

1. MP-MS-1, Revision 13, "Main Steam Safety Valve Inspection and Repair," dated March 19, 1987, did not specify torque values for reinstallation of the Main Steam Safety Valves (MSSVs). Past practice for installation of the MSSVs has utilized the practice of "slugging." This was due to the fact that it was, and still is, impossible to physically fit to the torque wrench onto the flange stud nuts due to the limited space adjacent to the MSSVs. This method of bolt-up was discontinued in May 1987 when this violation was identified.
2. MO 16275 was issued to reinstall the main steam safety valves. The work was completed in March 1983. The MO contained instructions to torque the MSSVs to 750 foot-pounds. These instructions were marked through with a comment "cannot be torqued." Because a PRC approved procedure was not required, the fact that utilizing a torque wrench was not possible was not noted by the group which supplied the values. This failure to feed back information resulted in the violation.
3. In the area of instrument accuracy, OPPD was found to be deficient of procedures for assuring the accuracy of instruments used to calibrate (a) the wide range level indicators for steam generators A and B, and (b) the temperature detectors for reactor coolant hot and cold legs were within the accuracy constraints required by the design bases. OPPD did not have a specific procedure assuring instrument accuracies during calibration of the specified instrumentation. However, an investigation into this accuracy question has demonstrated that OPPD currently meets appropriate acceptance criteria for accuracies between test and measuring equipment and process equipment.
4. OPPD uses meggering as a gross indication of cable and/or equipment integrity. The measurements taken have been used as a qualitative measurement, not quantitative. Surveillance testing also ensures proper operability of equipment.

The Corrective Steps Which Have Been Taken and the Results Achieved.

1. OPPD has developed and issued interim torquing guidelines. With these guidelines in place, a new procedure was written and issued covering the reinstallation of the MSSVs, including necessary quantitative acceptance criteria.
2. Increased attention has been given to maintenance of safety-related systems and detailed attention has been given to the areas of procedures and torquing requirements. In this new environment, the reinstallation of the MSSVs requires the use of a PRC approved procedure (MP-MS-4). As noted in Violation A, 1987 refueling outage maintenance orders were also reviewed for torquing considerations.

Violation B (Continued)

The Corrective Steps Which Have Been Taken and the Results Achieved.
(Continued)

3. Safety related calibration procedures performed during the 1987 refueling outage were evaluated for compliance with calibration accuracy requirements stated in Standing Order M-28, "Calibration of Test Equipment and Plant Process Equipment used to Support the 'In-Service Inspection of Nuclear Plant Components' Program." Those procedures examined complied with the requirements of Standing Order M-28. In the interim period, prior to safety related calibration procedure upgrading, a policy has been implemented requiring engineering to identify safety-related accuracies prior to performance of any safety related calibration procedure.
4. OPPD has reviewed these areas of concern and will investigate the applicability of quantitative rather than qualitative acceptance criteria for incorporation into applicable procedures.

The Corrective Steps Which Will be Taken to Avoid Further Violations

1. OPPD has expanded upon the interim torquing guidelines and is currently awaiting PRC approval of the new procedure concerning bolting. This procedure will provide written instructions for selecting torque values for any bolted joint and will be used when updating or issuing procedures which require torquing.
2. Heightened management attention to the use of PRC approved procedures for maintenance on safety-related equipment has resulted in the development of a new bolting procedure. As with item 1, this procedure will provide the necessary written guidance to ensure bolted joints are formed to the proper written acceptance criteria.
3. OPPD uses generic test instruments rather than job specific test instruments to perform calibrations on process equipment. In order to ensure that appropriate quantitative acceptance criteria exists between process equipment and its test equipment, OPPD will review and update safety related calibration procedures following an evaluation of all safety related process equipment versus appropriate test equipment accuracies.
4. Heightened management attention to this matter is being given and will result in the development of a generic procedure to identify proper meggering techniques. This procedure will identify applicable acceptance criteria (either qualitative or quantitative) to be used during the meggering process and will be used when updating or issuing procedures which require meggering.

Also, OPPD is currently developing a procedure writer's guide which will be used as guidance to prepare and update specific procedures. Requirements for such items as torquing, test equipment accuracy, and meggering will be addressed and reviewed for inclusion into the appropriate procedures.

The Date When Full Compliance will be Achieved

OPPD is currently in full compliance relative to the applicable interim policies and programs.

- C. Technical Specification 5.8.1 requires that written procedures and administrative policies shall be established, implemented and maintained that meet or exceed the minimum requirements of Sections 5.1 and 5.3 of ANSI N18.7-1972 and Appendix A of USNRC Regulatory Guide 1.33.

Tie Breaker Calibration Procedure, Revision 3, satisfies the above requirements for AC circuit breaker testing.

Contrary to the above, the licensee failed to implement the appropriate procedure and instead, an incorrect procedure for CP-main breakers was used for testing the CP-tie breakers.

This is a Severity Level IV violation (Supplement I)

OPPD's Response

The Reason for the Violation, if Admitted

OPPD admits the violation occurred. Investigation into the reason for the use of the incorrect calibration procedure revealed that the preventive maintenance (PM) sheet for the tie breaker did not specify which calibration procedure to use. As a result, the foreman in charge of the task obtained what he thought was the correct procedure and assigned the task to an electrician. The electrician, assuming he had the correct procedure, commenced performing the procedure until trouble occurred during overcurrent testing. At that time, the electrician determined that the incorrect procedure was being used.

The Corrective Steps That Have Been Taken and the Results Achieved

The correct calibration procedure was obtained and performed satisfactorily on the tie breaker. Additionally, main and tie breakers previously calibrated during the 1987 refueling outage were verified to be calibrated using the correct procedures.

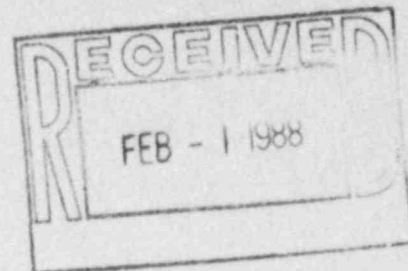
The Corrective Steps Which Have Been Taken to Avoid Further Violations

The PM sheets associated with the main breakers and tie breakers were revised on April 21, 1987, to list the specific calibration procedures to be used.

The Date When Full Compliance will be Achieved

OPPD is now in full compliance.

Omaha Public Power District
1623 Harney Omaha, Nebraska 68102
402/536-4000



January 27, 1988
LIC-88-024

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

- References:
1. Docket No. 50-285
 2. Letter from NRC (J. E. Gagliardo) to OPPD (R. L. Andrews) dated May 8, 1987
 3. Letter from NRC (R. E. Hall) to OPPD (R. L. Andrews) dated August 24, 1987
 4. Letter from OPPD (R. L. Andrews) to NRC (Document Control Desk) dated September 24, 1987 (LIC-87-248)
 5. Letter from OPPD (R. L. Andrews) to NRC (Document Control Desk) dated November 4, 1987 (LIC-87-680)

Gentlemen:

SUBJECT: Update to Response - Notice of Violation (NRC Inspection Report 50-285/87-05)

Omaha Public Power District's (OPPD) response to the Notice of Violation as contained in Reference 5 has been updated. Changes have been made in the "Corrective Steps" of Violation A, the "Reason" portion in Violation B.4, and the "Corrective Steps" of Violation B. The revised portions are denoted by a vertical line in the right margin. If you have any questions concerning this matter, please contact us.

Sincerely,

R. L. Andrews
Division Manager
Nuclear Production

RLA/me

cc: LeBoeuf, Lamb, Leiby & MacRae
R. D. Martin, NRC Regional Administrator
A. Bournia, NRC Project Manager
P. H. Harrell, NRC Senior Resident Inspector

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LIC-88-031

Response to Notice of Violation

During an NRC inspection conducted on April 6-10, 1987, violations of NRC requirements were identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions, " 10 CFR Part 2, Appendix C (1987), the violations are listed below:

- A. 10 CFR Part 50, Appendix B, Criterion III, requires, in part, that measures be established to assure that applicable regulatory requirements and design bases for those structures, systems, and components to which this appendix applies, are correctly translated into specifications, drawings, procedures, and instructions. These measures must include provisions to assure that appropriate quality standards are specified and included in design documents and that deviations from such standards are controlled. The design control measures must provide for verifying or checking the adequacy of design, such as by the performance of design reviews, by the use of alternate or simplified calculational methods, or by the performance of a suitable testing program. In addition, design changes, including field changes, must be subject to design control measures commensurate with those applied to the original design.

Section A.4, "Design Control," of the OPPD Quality Assurance Plan commits to Regulatory Guide 1.64 and ANSI N45.2.11-1974. Section 6.0, "Design Verification," of ANSI N45.2.11-1974 specifies that design verification is to be performed by individuals or groups other than those who performed the original design and that design activities are to be controlled.

Contrary to the above, in March 1983, the licensee performed Maintenance Order (MO) 16275, which covered the reinstallation of main steam safety relief valves (MS SRV) 275, 276, 277, 278, 280, 281, 282, 291, and 292.

1. The MO contained instructions to torque the subject valves' in-line flange bolts to 750 foot-pounds; however, there was no documentation that an independent design verification had been performed in determining the specified torque value.
2. During MS SRV installation, the bolts were not stressed to the specified 750 foot-pounds but rather were stressed to unknown values in an uncontrolled manner (the use of a slugging wrench).

This is a Severity Level IV violation (Supplement II). (285/8705-01)

OPPD's Response

Reason for the Violation, if Admitted

During March 1983, the main steam safety valves (MSSV's) were installed as a result of Maintenance Order (MO) 16275. This MO contained information concerning torque values for the MSSV inlet flange studs. This information was deleted, without Plant Review Committee review, by the craft supervisor. The torque value of 750 foot-pounds was deleted because the craftsman could not physically fit the torque wrench onto the stud due to the limited space adjacent to the MSSV's. The use of a slugging wrench was then employed to tighten the bolted joint.

Violation A (Continued)

OPPD's Response (Continued)

Reason for the Violation, if Admitted (Continued)

The deletion of the torque value from the maintenance order instructions was not a violation of plant standing orders as a PRC approved procedure was not required in order to perform the work. However, this represents improper management attention to safety related bolted pressure boundary connections. This method of bolt-up was utilized until May 1987, when this violation was identified.

The Corrective Steps Which Have Been Taken and the Results Achieved

OPPD has developed and issued interim torquing guidelines. These guidelines provided torque values for the following: CQE and fire protection pressure boundary bolted connections; seismic mounting or supports of mechanical and electrical equipment; EEQ equipment where required to maintain qualification; and NSSS threaded connections unless safety-wired or lock-nutted. These guidelines were implemented in May 1987.

Upon issuance of these guidelines, specific attention was given to those maintenance orders which encompassed the above noted items to ensure the requirements of the guidelines were being fulfilled. Additionally, a review was conducted of 1987 outage completed MO's and any "in-progress" MO's which needed to adhere to the requirements of the guidelines. Corrective action was taken as necessary to ensure compliance.

The MSSV reinstallation during the 1987 refueling outage occurred in early June 1987. OPPD, in an effort to ensure that the reinstallation of the MSSVs did not involve the use of a possibly over-stressed stud due to previous slugging operations, chose to purchase new studs for the MSSV inlet flanges. A new procedure was developed and received PRC approval for the reinstallation. This procedure, MP-MS-4, provided a calculational method to ensure that the pre-load stress of the studs on the inlet flange to the MSSVs was at a value of less than 50 percent of the yield strength of the particular stud material. This was verified by measuring actual stud elongation using vernier calipers.

Slugging of MSSVs, as in the past at Fort Calhoun Station, has proven to be a reliable leak-free method of bolting up the inlet flanges of the MSSVs. On July 2, 1986, when the Fort Calhoun Station tripped from full power operation, the MSSVs operated as designed to prevent overpressurization of the Main Steam piping. The inlet flange, after experiencing a higher than normal pressure during the transient, remained leak-free throughout the remainder of the operating cycle.

OPPD reviewed the method for performing the slugging. Based on the access in the area, the longest wrench that could have been used was a one-foot wrench. If a craftsman were to use a one-foot long slugging wrench in order to "slug-up" the MSSV studs, he would have to exhibit a force of 2085 foot-pounds at the very end of the slugging wrench. This would require a large swing of the sledge hammer and subsequently, a lot of room to swing it in. Very little room exists to perform this operation. OPPD therefore believes that previous slugging operation, even though uncontrolled, did not cause the stud material to be overstressed.

Violation A (Continued)

The Corrective Steps Which Will be Taken to Avoid Further Violations

OPPD has expanded upon the interim torquing guidelines program and has developed a new procedure concerning bolting. This procedure requires either vendor supplied torque values or torque values that have been independently reviewed. This procedure provides written instruction for selecting torque values for any safety related bolted joint and will be used when updating or issuing procedures which require torquing. This procedure is currently awaiting approval.

The Date When Full Compliance Will be Achieved

OPPD is presently in full compliance.

- B. 10 CFR Part 50, Appendix B, Criterion V, requires, in part, that activities that affect quality shall be prescribed by documented instructions, procedures, or drawings of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, and drawings. Instructions, procedures, or drawings shall include appropriate quantitative or qualitative acceptance criteria.

Section A.6, "Instruction, Procedures, and Drawings," of the OPPD Quality Assurance Plan implements this requirement, and specifies, in part, that quality-related activities for plant operations, fabrication, processing, assembly, inspection, and test be accomplished in accordance with the instructions, procedures, or drawings, and that such documentation adequately reflects all applicable quality requirements and contain the appropriate quantitative acceptance criteria (such as dimensions, tolerances, and samples) for determining that important activities have been satisfactorily accomplished.

Contrary to the above:

1. The licensee's procedure MP-MS-1, Revision 13, "Main Steam Safety Valve Inspection and Repair," dated March 19, 1987, which was used to reinstall MS SRV 275, 276, 277, 278, 280, 281, 282, 291, and 292 did not specify torque values to assure that design bolt stress was achieved.
2. The initial MO 16275 specified a bolt torque value; however, the parameter was marked through with the comment "cannot be torqued." Later MOs did not specify torque values. Therefore, a design requirement was deleted without a proper review and acceptance of the revised work instruction.
3. The licensee failed to establish procedures for assuring that the accuracy of instruments used to calibrate (a) the wide range level indicators for steam generators A and B, and (b) the temperature detectors for reactor coolant hot and cold legs were within the accuracy constraints required by the design bases.
4. The licensee failed to specify equipment, acceptance criteria, or procedure for meggering. Examples of such failures include the following:
 - a. Procedures PM-EE-VA-3/7, Revision 0, and PM-MOV-1, Revision 3, indicated that meggering was to be accomplished, however, neither the instrument nor the voltage of the instrument was provided.
 - b. Procedures PM-EE-VA-3/7, Revision 0; PM-EE-1-13, Revision 5; and PM-EE-3.0, Revision 0, do not specify meggering acceptance criteria.
 - c. No procedure specified meggering controls to be applied to containment ventilation and cooling fan motors.

This is a Severity Level IV violation (Supplement II). (285/8705-02)

Violation B (Continued)

OPPD's Response

Reason for the Violation, if Admitted

1. MP-MS-1, Revision 13, "Main Steam Safety Valve Inspection and Repair," dated March 19, 1987, did not specify torque values for reinstallation of the Main Steam Safety Valves (MSSVs). Past practice for installation of the MSSVs has utilized the practice of "slugging." This was due to the fact that it was, and still is, impossible to physically fit to the torque wrench onto the flange stud nuts due to the limited space adjacent to the MSSVs. This method of bolt-up was discontinued in May 1987 when this violation was identified.
2. MO 16275 was issued to reinstall the main steam safety valves. The work was completed in March 1983. The MO contained instructions to torque the MSSVs to 750 foot-pounds. These instructions were marked through with a comment "cannot be torqued." Because a PRC approved procedure was not required, the fact that utilizing a torque wrench was not possible was not noted by the group which supplied the values. This failure to feed back information resulted in the violation.
3. In the area of instrument accuracy, OPPD was found to be deficient of procedures for assuring the accuracy of instruments used to calibrate (a) the wide range level indicators for steam generators A and B, and (b) the temperature detectors for reactor coolant hot and cold legs were within the accuracy constraints required by the design bases. OPPD did not have a specific procedure assuring instrument accuracies during calibration of the specified instrumentation. However, an investigation into this accuracy question has demonstrated that OPPD currently meets appropriate acceptance criteria for accuracies between test and measuring equipment and process equipment.
4. In the past, OPPD used meggering as a gross indication of cable and/or equipment integrity and considered meggering to be a craft skill that did not require procedural control.
 - a. OPPD agrees that procedures PM-EE-VA-3/7 and PM-MOV-1 did not specify the instrument to be used for meggering and the test voltage to be applied.
 - b. OPPD agrees that procedures PM-EE-VA-3/7, PM-EE-1 and PM-EE-3.0 did not specify meggering acceptance criteria.
 - c. OPPD agrees that no procedure specified meggering controls to be applied to containment ventilation and cooling fan motors.

The Corrective Steps Which Have Been Taken and the Results Achieved.

1. OPPD has developed and issued interim torquing guidelines. With these guidelines in place, a new procedure was written and issued covering the reinstallation of the MSSVs, including necessary quantitative acceptance criteria. A new procedure (MP-BOLT-1) has been written and is awaiting approval for selecting torque values for any safety related bolted joint and will be used when updating or issuing procedures which require bolting. Torque values for bolting will be as specified by the vendor or as determined by MP-BOLT-1.

Violation B (Continued)

The Corrective Steps Which Have Been Taken and the Results Achieved. (Continued)

2. Increased attention has been given to maintenance of safety-related systems and detailed attention has been given to the areas of procedures and torquing requirements. In this new environment, the reinstallation of the MSSVs requires the use of a PRC approved procedure (MP-MS-4). As noted in Violation A, 1987 refueling outage maintenance orders were also reviewed for torquing considerations.
3. Safety related calibration procedures that were evaluated complied with calibration accuracy requirements stated in Standing Order M-28, "Calibration of Test Equipment and Plant Process Equipment used to Support the 'In-Service Inspection of Nuclear Plant Components' Program." OPPD has reviewed and updated Standing Order M-26 "Calibration Procedures" to include steps to ensure test and measurement equipment inaccuracies are evaluated to ensure process instrumentation can be properly calibrated. A list of affected instrument loops has been included in the Standing Order and another review of the list for completeness is being performed. A new form FC-1102 "Calibration Accuracy Verification" has also been issued to verify accuracy.
4. A generic procedure to identify proper meggering techniques (MP-EE-MEGGER) has been approved. This procedure identifies applicable acceptance criteria to be used during the meggering process and will be used when updating or issuing procedures which require meggering. Form FC-45 "Insulation Resistance - Dielectric Absorption Test Sheet" has been revised to add temperature corrected megger values to the data sheet, to reformat the data sheet for clarity, and to add information not listed on the previous data sheet revision.

Procedures PM-EE-VA-3/7, PM-MOV-1, PM-EE-1, and PM-EE-3.0 have all been revised to list the megger test voltage to be applied and to megger in accordance with MP-EE-MEGGER.

Procedure MP-EE-12 has been revised to have the containment ventilation and cooling fan motors meggered in accordance with MP-EE-MEGGER. Other procedures that have been revised to megger in accordance with MP-EE-MEGGER are MP-EE-8, MP-RC-10-3, PM-EE-2, - 3.2, 4.0, 21, PM-ST-2, and ST-ESF-6.

The Corrective Steps Which Will be Taken to Avoid Further Violations

OPPD is currently developing a procedure writer's guide which will be used as guidance to prepare and update specific procedures. Requirements for such items as torquing, test equipment accuracy, and meggering will be addressed and reviewed for inclusion into the appropriate procedures. The procedure addressing torquing values has been written and is currently being reviewed by the Plant Review Committee (PRC) and will be issued upon approval.

The Date When Full Compliance will be Achieved

OPPD is currently in full compliance.

C. Technical Specification 5.8.1 requires that written procedures and administrative policies shall be established, implemented and maintained that meet or exceed the minimum requirements of Sections 5.1 and 5.3 of ANSI N18.7-1972 and Appendix A of USNRC Regulatory Guide 1.33.

Tie Breaker Calibration Procedure, Revision 3, satisfies the above requirements for AC circuit breaker testing.

Contrary to the above, the licensee failed to implement the appropriate procedure and instead, an incorrect procedure for CP-main breakers was used for testing the CP-tie breakers.

This is a Severity Level IV violation (Supplement I)

OPPD's Response

The Reason for the Violation, if Admitted

OPPD admits the violation occurred. Investigation into the reason for the use of the incorrect calibration procedure revealed that the preventive maintenance (PM) sheet for the tie breaker did not specify which calibration procedure to use. As a result, the foreman in charge of the task obtained what he felt was the correct procedure and assigned the task to an electrician. The electrician, assuming he had the correct procedure, commenced performance of the procedure until trouble occurred during overcurrent testing. At that time the electrician determined that the incorrect procedure was being used.

The Corrective Steps That Have Been Taken and the Results Achieved

The correct calibration procedure was obtained and performed satisfactorily on the tie breaker. Additionally, main and tie breakers previously calibrated during the 1987 refueling outage were verified to be calibrated using the correct procedures. The PM sheets associated with the main breakers and tie breakers were revised on April 21, 1987, to list the specific calibration procedures to be used.

The Corrective Steps Which Will be Taken to Avoid Further Violations

No further action is required.

The Date When Full Compliance will be Achieved

OPPD is now in full compliance.